

At Little Rock there was a rise of 9 feet between the 8th and 13th to a maximum stage of 17.3 feet. After the 13th there was a steady fall during the remainder of the month. The Arkansas at Little Rock and below that place was navigable throughout the month.

Relatively high stages prevailed in the White River from Newport to its mouth during the first three weeks of April.

Moderately low stages prevailed in the Red River and only a few unimportant changes occurred during the month.

There was a sudden rise of 18.5 feet in the upper Ouachita from the 10th to 15th, giving a maximum stage of 36.5 feet at Camden on the latter date. The lower Ouachita continued relatively high with stages generally 33 to 36.9 feet.

High water prevailed in the lower Mississippi River during the month. The flood stage was passed at Memphis on the 1st; Helena on the 1st; Arkansas City on the 5th; Vicksburg on the 8th; Natchez on the 11th; Baton Rouge on the 14th; Donaldsonville on the 15th; and New Orleans on the 17th. The highest stages in feet and tenths were as follows: Memphis, 46.5 on the 10th; Helena, 55.2 on the 22d; Arkansas City, 55.1, 21st to 25th; Vicksburg, 52.3, 27th and 28th; Natchez, 52.4, 26th and 27th; Baton Rouge, 41.1 on the 28th; Donaldsonville, 32.6 on the 28th; and New Orleans, 20.2 on the 26th. Water from crevasses in Arkansas, one in Mississippi, and one in Louisiana above the mouth of Red River, overflowed considerable areas and caused much damage. Full reports on these floods will appear at a later date.

DESTRUCTIVE RAINSTORM OF APRIL 8-9, 1913, IN ARKANSAS.

By HENRY F. ALCIATORE, Section Director.

Torrential rains fell in parts of Arkansas on the 8th and 9th of April, 1913, and in many localities all previous records of excessive 24 hour falls were broken. At Little Rock, in the center of the State, more than 9 inches of rain occurred in less than 21 hours. Small streams overflowed their banks, and thousands of acres of farming lands were submerged. Many people were driven from their homes; scores of bridges and culverts were washed away; and in some sections planting, which was well advanced, will have to be done over again. Serious wash-outs on the Iron Mountain and the Rock Island roads out of Little Rock tied up railroad trains for several days; county roads were rendered impassable, and many rural carriers were prevented from delivering mails. No lives were lost, but property losses were very large, probably exceeding half a million dollars. The railroads were the greatest sufferers, much damage having occurred on the roads between Little Rock and Hot Springs.

WEATHER CONDITIONS.

In that part of the State where the greatest precipitation occurred the rains began during the evening of the 3th. The weather map of that date shows that at 8 a. m., seventy-fifth meridian time, about 11 hours before the rainstorm began at Little Rock, an extensive low-pressure area, central over the Texas panhandle, with lowest barometer reading 29.64 inches, at Amarillo, occupied the southern Rocky Mountain region, Texas, Louisiana, Arkansas, Oklahoma, and Kansas. Freezing or lower

temperatures prevailed in the northwestern quadrant of this low, while in the eastern and southern quadrants the temperature ranged from 56° to 70°. In Arkansas the winds were easterly to southerly, and the temperature was several degrees above the normal.

Twenty-four hours later the storm had moved to northwestern Arkansas, and appeared to be central near Bentonville, where the pressure was 29.72 inches. Meantime, a secondary depression had developed over the Rio Grande Valley, the barometer reading at Del Rio, Tex., being 29.72 inches, the same as that recorded at Bentonville, Ark. The weather continued warmer than usual in Arkansas, and the winds, which were light, were blowing from the south and east.

By the morning of the 10th, the Arkansas storm area had moved into Iowa, while the Texas disturbance had disappeared to the southward.

THE STORM AT LITTLE ROCK, ARK.

The most remarkable rainfall recorded at Little Rock during any 24-hour period since observations were begun by the Weather Bureau in 1879 was that which occurred on April 8 and 9, 1913. All previous records for heavy rainfall were broken, and the damage resulting from the storm within the city limits was approximately \$25,000.

Rain began to fall at 6.20 p. m. of the 8th, and with the exception of one 35-minute interval, there was a continuous downfall until 3 p. m. of the 9th. During the first downpour, an excessive rate was maintained from 2.36 to 5.37 a. m. of the 9th, the amount of rain recorded during this period (3 hours and 1 minute) being 4.48 inches; while the total amount for the entire period, from 6.20 p. m. of the 8th to 7.10 a. m. of the 9th (12 hours and 50 minutes) was exactly 6 inches. This amount is almost 1½ inches more than the normal rainfall for the entire month.

The second rain began at 7.45 a. m. and lasted till 3 p. m. The fall was at an excessive rate from 8.41 a. m. to 12.22 p. m., the amount registered during that period (3 hours and 41 minutes), being 3.14 inches, while the total amount recorded was 3.58 inches. The actual duration of the rain in this extraordinary storm was 20 hours and 5 minutes. During that time the quantity of rain registered by the Weather Bureau self-recording rain gage on the roof of the Southern Trust Building (132 feet above the street) was 9.58 inches. It is probable that the rain that fell upon the ground, in open spaces, exceeded 10 inches during the same period.

As to intensity of fall, the gage readings show that the greatest amount of rain recorded in any 5-minute period was 0.27 inch; in 10 minutes, 0.48 inch; in 15 minutes, 0.63 inch; in 30 minutes, 1.09 inches. The greatest amount recorded in 1 hour was 1.83 inches; in 2 hours, 3.23 inches, and in 3 hours, 4.43 inches.

Prior to April, 1913, the two greatest 24-hour falls recorded in this city were, 6.33 inches on May 9-10, 1882, and 6.22 inches on July 30-31, 1902.

Thunder of moderate intensity was heard occasionally from 6.31 p. m. of the 8th till 3.50 p. m. of the 9th, the last peal having occurred 50 minutes after the cessation of the rain.

The table below shows the quantity of rain recorded during the storm at regular and cooperative stations of the Weather Bureau, where the amount of precipitation for the entire storm equaled or exceeded 4 inches in 24 or 36 hours:

Station.	County.	Amount.
Little Rock.....	Pulaski.....	9.58
Hot Springs.....	Garland.....	7.25
Wiggs.....	do.....	6.18
Malvern.....	Hot Springs.....	5.82
Clarendon.....	Monroe.....	5.65
Fraziers Turnpike.....	Pulaski.....	5.44
Georgetown.....	White.....	5.36
Conway.....	Faulkner.....	5.23
Brinkley.....	Monroe.....	4.56
Amity.....	Clark.....	4.50
England.....	Lonoke.....	4.46
Stuttgart.....	Arkansas.....	4.25
Helena.....	Phillips.....	4.01

DAMAGES FROM THE STORM.

More than \$100,000 damage was done to roads, bridges, and culverts in Pulaski County alone, and as much more to farms, many of which were cut up by the waters that flowed over them. Much of the country in the vicinity of Fourche Bayou, Nineteenth Street, and the Lawson and Mablevale Pikes was under water, and many of the roads in the county were so badly damaged that it will take months to repair them.

In the flooded district of Little Rock, which covers about 8 blocks in the south end of town, between 30 and 40 houses were in the water, which in some places was 10 feet deep, due to the backing of the Fourche Bayou water into the Swaggerty Branch. The water backed into that district so rapidly that residents had to hurriedly leave their homes, and had no time to remove their household goods. Rose Creek became a torrent in a few hours, and the flood, sweeping through the district between Eighth and Ninth Streets and Rice and Thayer Streets, tore several houses from their foundations. The flood in the downtown district seriously impaired the early morning street-car service, and some of the crews waded in water knee deep to reach their cars at the barn. The worst damage occurred on the Pulaski Heights line; at six different places the track was undermined by the water. The most widespread hardship caused by the storm resulted when the supply of natural gas was cut off about 10 p. m. of the 8th by the breaking of the mains near Benton, Ark., about 25 miles southwest of Little Rock. The city was without natural or artificial gas until 8 a. m. of the 11th.

At Second and Main Streets water in the basement of the Western Union Building put the United States Observatory electrical time system apparatus out of commission.

At Biddle, a short distance southeast of the city, where the Rock Island shops are located, the flood was damaging. The Sweet Home Pike was impassable, the flood water being over the top of the bridge that spans Fourche Bayou.

At Argenta, across the river from Little Rock, the rains did considerable damage. The Baring Cross section, particularly that portion of it known as Vestal's Addition, was flood swept, many homes being inundated; some of the occupants were rescued in boats. The losses in houses partly flooded, furniture ruined, streets, bridges, and culverts washed out, will amount to many thousands of dollars.

EXCERPTS FROM PRESS REPORTS.

HOT SPRINGS, ARK., April 9.—The rainstorm of the 8th-9th is said to be the most severe in the history of this city. The approximate value of the property damaged or destroyed is \$50,000. Part of the city lies between two mountains. Loose timbers, stones, branches of trees, and even boulders were carried down the mountain sides into Central Avenue. Water poured into store basements and damaged goods stored therein. In some places the water on the avenue was almost knee deep. Whittington Park was damaged to the extent of about \$4,000, one of the concrete bridges having been washed away. The Iron Mountain and the Rock Island Railroads are out of commission, due to serious washouts between Hot Springs and Benton, Ark.

April 10.—No trains are running in or out of this city, and it has been impossible to bring to this city the 140 passengers who are marooned at Benton, Ark., east of this city. The telegraph lines are down.

The Ouachita River is higher than it has been for 20 years, and has flooded the country for a mile on either side of its banks.

ELDORADO, ARK., April 9.—Heavy rains fell here last night and today. Farm lands are badly washed in the hills, and most of the bottom lands are overflowed. The planting of corn and cotton will be delayed considerably.

BENTON, ARK., April 9.—The rain in this section was very heavy. The Iron Mountain track south of this town was washed away for a distance of several hundred feet between here and the Saline River, and was damaged also east of here. The Rock Island track also suffered damages. Traffic is entirely suspended. Much lumber belonging to the Lena Lumber Co. and the American Hardwood Lumber Co. was washed away. No lives were lost.

CONWAY, ARK., April 9.—Heavy rains in this vicinity caused a serious washout on the Iron Mountain track south of here, near Marche, Ark., and train service was suspended for several hours. The track was more or less under water for almost 2 miles. Cadron and Beaver Fork Creeks are out of their banks and rural carriers can not cross them.

TEXARKANA, ARK., April 9.—Heavy rains caused washouts on the Iron Mountain track north of this city, and train service has been delayed. The fast mail from St. Louis had to be detoured over the Cotton Belt Railroad tracks.

PINNACLE, ARK., April 10.—A serious landslide, due to the heavy rains of the 9th, occurred on the Iron Mountain road near this place, and trains were delayed several hours. The mass of wreckage that swept down from the hills covered the tracks to a depth of 8 feet for a distance of about 100 feet.

BENTON, ARK., April 10.—The bridge over Hurricane Creek near this city was badly damaged. Railroad traffic is tied up. Trains Nos. 17 and 35, on the Iron Mountain Railroad, are stalled here with about 140 passengers aboard bound for Hot Springs.

MALVERN, ARK., April 10.—Malvern has been without mail for two days as the result of the heavy rains, which did great damage to farm lands. Sewers were overflowed, and several business houses were flooded.

The Ouachita River at Rockport, Ark., about 12 miles west of here, is said to have reached the highest stage in its history. Bridges have been washed away and several sawmills are out of commission.